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Face recognition in low-resolution images under small sample conditions with face-part detection and alignment

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1) Detecting an eye pair is more effective when using an encompassing rectangle rather than using two separate rectangles.

2) Rotationally aligned images yield a higher accuracy of face recognition than unrotated faces, in spite of the risk of an angle estimation error.

3) Using multiple regions of a face, selected with the maximum-similarity rule, gives a higher accuracy, compared to providing the full face image to a classifier in face identification.

4) When tuning a face-identification system for small sample sizes, the control parameters (e.g. similarity metric) can successfully be estimated from a large, independent, generic dataset of other persons.

6) In small sample size cases, the use of mirror images helps to obtain better accuracies, the maximum improvement occurring when only one sample image is available for the face of a subject.

7) The histogram of gradients (HOG), used in a bag of words approach (BOW), is shown to yield better results compared to applying HOG directly to images.

8) Face recognition is still not fundamentally solved due to occlusion, pose, illumination, and expression variations.